

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 1

Item ID: D119-796-141

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D119-796-141	per E A.P. 15.01.09								
120		0.00							
120	Packaging								BC 15/01/10
Packaging	Memo	0.00							
Packaging									
130		0.00							
130	BENDING MACHINE - CROSSTUBES								
CNC Bend 2	Memo	0.00							JW 15.02.10
CNC Alpha 160 Bender	Bend tube as per Dwg D119-796-141 using CNC bender program								
140		0.00							
140	QC15- Crosstube Dimensional Check								
QC	Memo	0.00							
Quality Control									

DAS
03
9-89

DP 15-2-12

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 2

Item ID: D119-796-141

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes	0.00							
150									
Crosstubes	Memo	0.00							
Crosstubes	***** ENSURE PROPER JIG POSITIONING *****								
	1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***								
	2-Position cuffs on tube ensure proper positioning								
	3-Drill tube as per dwg using DT_____ location #7 & # 212 ULF using jig DT_____ and DT_____ as per QSI 10								
	4-Identify cuff position and Batch # on each and identify tube as per dwg D119-796-141.								
	5- *** WEAR LATEX GLOVES WHEN HANDLING CROSTUBE*** Inspect surface damage								
	6- Deburr and realodine cuff.								
160	QC5- Inspect part completeness to step on W/O	0.00							
160									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSTUBE***								

BL/2W 15/02/12

BL 15/02/13

DAS
38
9-89
15-02-17

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 3

Item ID: D119-796-141

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170		0.00							
170						1			DAS
HandFXtube	Memo	0.00							41
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								9-89
	1- CLEAN CROSSTUBE WITH WASH'N WIPE								15-2-17
180									
	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Liquid Penetrant Inspection as per QSI 038Or								
	Issue P/O 27455 LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190									
	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								

CX 15/02/17 ①

IX SP 15-02-17

Work Order ID 129447

129447

February-09-15 1:35:02 PM

Page 4

Item ID: D119-796-141

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200 *200* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D119-796-141	0.00 0.00				1			38 9-89
210 *210* HandFXtube Hand Finishing Crosstubes	Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1- PRESSURE WASH AND THEN USE WASHH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION	0.00 0.00				BL	15/02/17		
220 *220* QC Quality Control	QC7-Inspect Chemical Conversion Coat Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***	0.00 0.00				1			EB 15-0-20

FEB 20 2015

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 5

Item ID: D119-796-141

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
230	SprayPaint								
SprayPaint	Memo	0.00							
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1-Prime inside and outside crosstube as per QSI 005 4.2								
	PRIMER batch: 130128								
	Start time: 4:00								
	Finish time: 5:00								
	Clear 130762								
240									
240	QC14- Inspect Spray Paint	0.00							
QC	Memo	0.00							
Quality Control									

1 _____ 011 15-02-20

_____ 15-02-25

Work Order ID 129447

129447

February-09-15 1:35:02 PM

Page 6

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
Revision ID: Stop *NS2*
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 2/09/15 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 2/27/15 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
242		0.00							
242									
Crosstubes	Memo	0.00				1			PK 15-02-28
Crosstubes	1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 05152-041			AL 15-02-09					
	2- Install DT10089 with proseal 890 on concave surface, 0.100" MIN thick as per dwg using DT10089								
	Proseal Batch: m130986								
	EXP: 6/15								
	PROSEAL CURE TIME 72 HOURS:								
	Start: 15-02-28 10am								
	Finish: 15-03-03								
	3- Install radius block as per dwg								
	4- Mask underside of crosstube as shown as per dwg prior to painting.								
244	QC5- Inspect part completeness to step on W/O	0.00							
244									DAS
QC	Memo	0.00				1			38
Quality Control									9-89
									15-03-16

Work Order ID 129447

129447

Page 7

February-09-15 1:35:02 PM

Item ID: D119-796-141

Accept

N9000040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00

1

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

246

Spray Painting per QSI005 4.2

0.00

246

SprayPaint

Memo

0.00

Spray Painting

1- Paint outside crosstube as per QSI 005 4.2

PAINT batch: 131599

Start Time: 100

Finish Time: 130

2- Remove masking and apply matte clear coat as per dwg

Matte Clear Batch:

N/A

248

QC14- Inspect Spray Paint

0.00

248

QC

Memo

0.00

Quality Control

DAS
38
9-88

15-03-16

Work Order ID 129447

129447

February-09-15 1:35:02 PM

Page 8

Item ID: D119-796-141

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N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Crosstubes	0.00							
250									
Crosstubes									
Crosstubes									
	Memo	0.00							
	Assemble as per Dwg D119-796-141								
	1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg								
	2- Install supports, clamp with the proper position with Proseal 890 per dwg D119-796-141 and QSI 015								
	A/R Proseal 890 Batch: <u>M130986</u>								
	EXP: <u>6/15</u>								
	PROSEAL CURE TIME 72 HOURS:								
	Start: <u>15-03-05</u>								
	Finish: <u>15-03-08</u>								

Torque all clamps to 80-100 IN-LBS.

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 9

Item ID: D119-796-141

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N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 2/27/15 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
260 *260* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED AS PER DWG.***	0.00 0.00				1			38 9-89 15-03-16
270 *270* Packaging Packaging	Pick Kit Memo	0.00 0.00							
280 *280* QC Quality Control	QC4- 100% Inspect kits for completeness Memo	0.00 0.00							

SEE 290
130032
DAS
06
9-89
MAR 1
MAR 19 2015

Work Order ID 129447

February-09-15 1:35:02 PM

129447

Page 10

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 2/09/15 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 2/27/15 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
290		0.00							
290	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D119-796-141								
300									
300	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

CHG 002

DAS
66
9-89

MAR 19 2015

15/3/19

UMF
15-3-19

Picklist Print

February-09-15 1:35:01 PM

Page 1

Work Order ID: 129447

129447

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15

Required Date: 2/27/15

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.09.03 NEW ISSUE DD VERF:JLM IPP
REV:B 14.10.15 AS PER REV.B DD VERF:JLM IPP REV:C
14.11.19 AS PER REV.C DD VERF:JLM IPP REV:D 14.12.12
AS PER REV.pd1 DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

CR3212-4-07

Purchased

No

Each

215.0000

16

CR3212-4-07

CHERRY RIVET

**

CA 15-02-20

Location

Loc Qty

Loc Code

ST320

215

m126320

15

m131317

200

16

D119-796-141TRN

Manufactured

No

Each

4.0000

1

D119-796-141TRN

Crosstube Turning Detail

**

Location

Loc Qty

Loc Code

LG

3

126937

1

126938

1

126939

1

prelim

1

128173

1

D2873-043

Manufactured

No

Each

4.0000

4

D2873-043

Nut Plate Assembly

**

BC 15/02/10

CA 15-02-20

Location

Loc Qty

Loc Code

LG052

4

125127

4

~~127571~~

127801

4

Picklist Print

February-09-15 1:35:01 PM

Page 2

Work Order ID: 129447

129447

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 2/09/15

Required Date: 2/27/15

Start Qty: 1.00

Required Qty: 1.00

D5123-3

Manufactured No

Each 76.0000 4

D5123-3

Clamp Cushion

CR 15-03-05

Location

Loc Qty

Loc Code

Ig55

76

126747

68

127133

8

Each

3.0000

2

CR 15-03-05

D5124-1

Manufactured No

D5124-1

Fwd Support

Location

Loc Qty

Loc Code

LG055

3

127135

3

126749

Each

12.0000

2

D5150-1

Manufactured No

D5150-1

Step Post

Location

Loc Qty

Loc Code

prelim

12

124084

3

127170

9

Each

62.0000

4

129454

MS21920-24

Purchased No

MS21920-24

Clamp

Location

Loc Qty

Loc Code

FG

2

117998

2

LG050

60

108258

1

120079

9

m129317

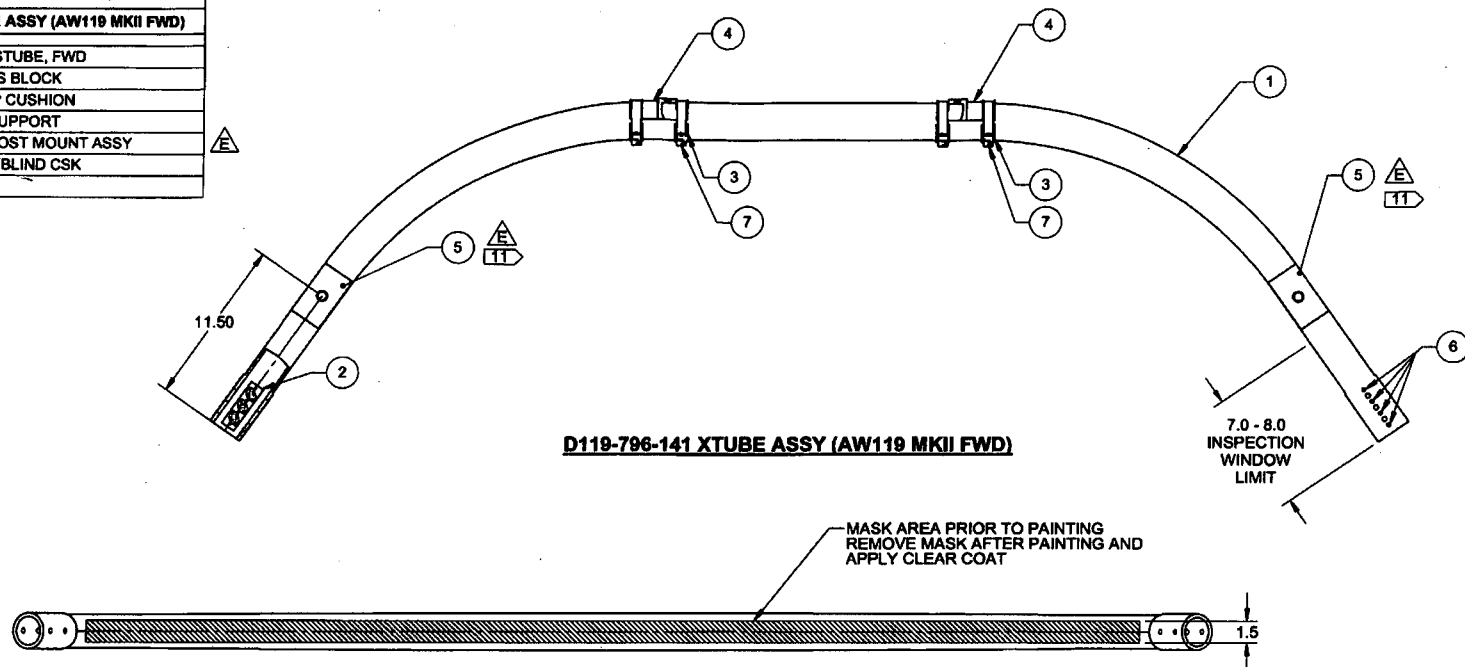
50

February-09-15 1:35:01 PM

Shop Packet Print

Page 2

ITEM	QTY	P/N	DESCRIPTION
	X	D119-796-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-796-141BND	CROSSTUBE, FWD
2	4	D2873-043	RADIUS BLOCK
3	4	D5123-3	CLAMP CUSHION
4	2	D5124-1	FWD SUPPORT
5	2	D5152-041	FWD POST MOUNT ASSY
6	16	CR3212-4-07	RIVET, BLIND CSK
7	4	MS21920-24	CLAMP



RELEASED

2015 FEB 09

ECN 15-516

NOTES:

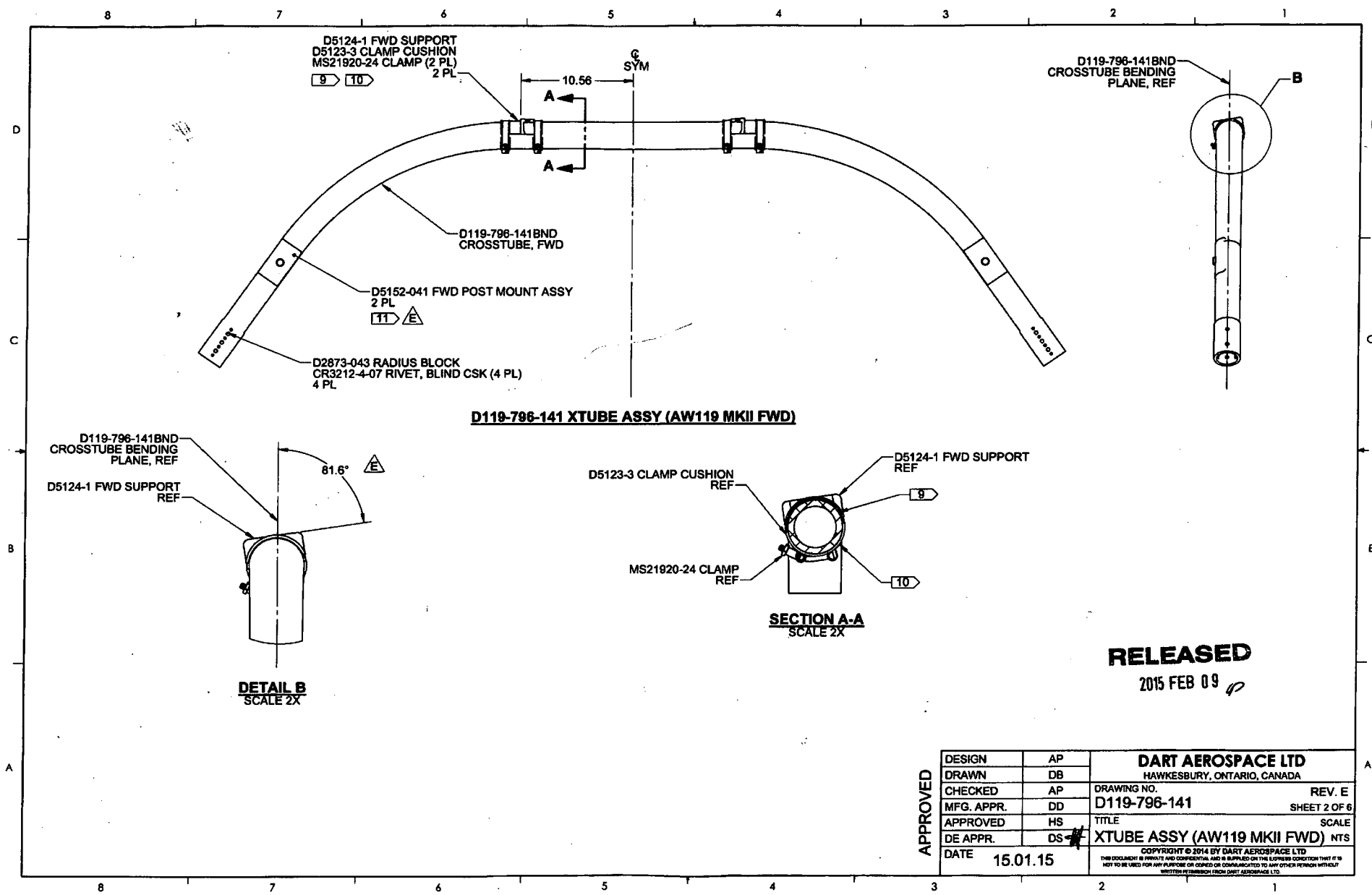
- 1) MATERIAL: N/A
- 2) FINISH: MASK UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA), PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.38 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) AFTER FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASHN/WIPE DEGREASER. APPLY A 0.100 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASHN/WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100 MIN THK. LOCATE D5152-041 USING TOOL DT10089.

E	D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (B7-2) DIMENSIONED FROM NEW DATUM	DB	15.01.15
D	ADD D5150-1 STEP POST (2X). MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D119-796-141 TITLE XTUBE ASSY (AW119 MKII FWD) NTS COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS RELEASED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DRAWN	DB		
CHECKED	AP		
MFG. APPR.	DD		
APPROVED	HS		
DE APPR.	DS	DATE 15.01.15	

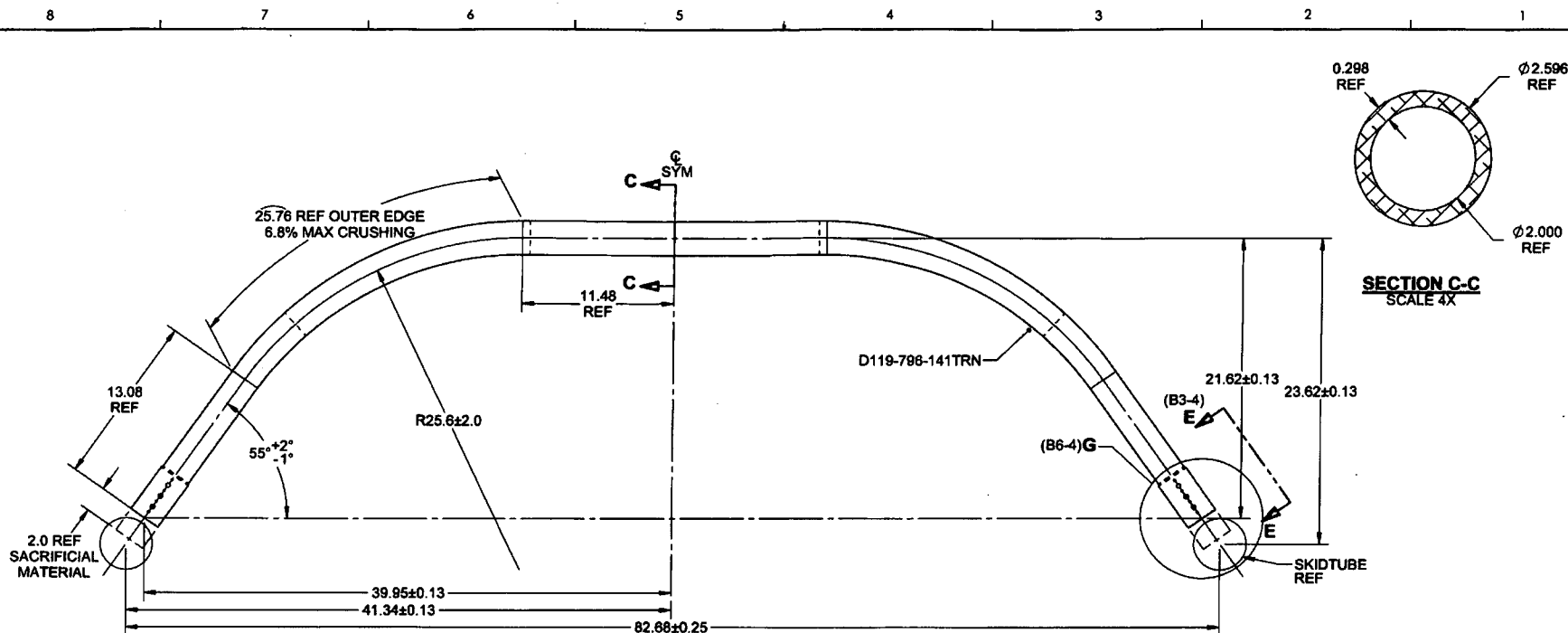
APPROVED

INSTALL D5152-041 AFTER APPLYING CLEAR COAT, PRIOR TO FINAL COAT

A.P.
15.02.23



APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 2 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
	DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D119-796-141BND CROSSTUBE, FWD 9
BENDING AND DRILLING DETAIL

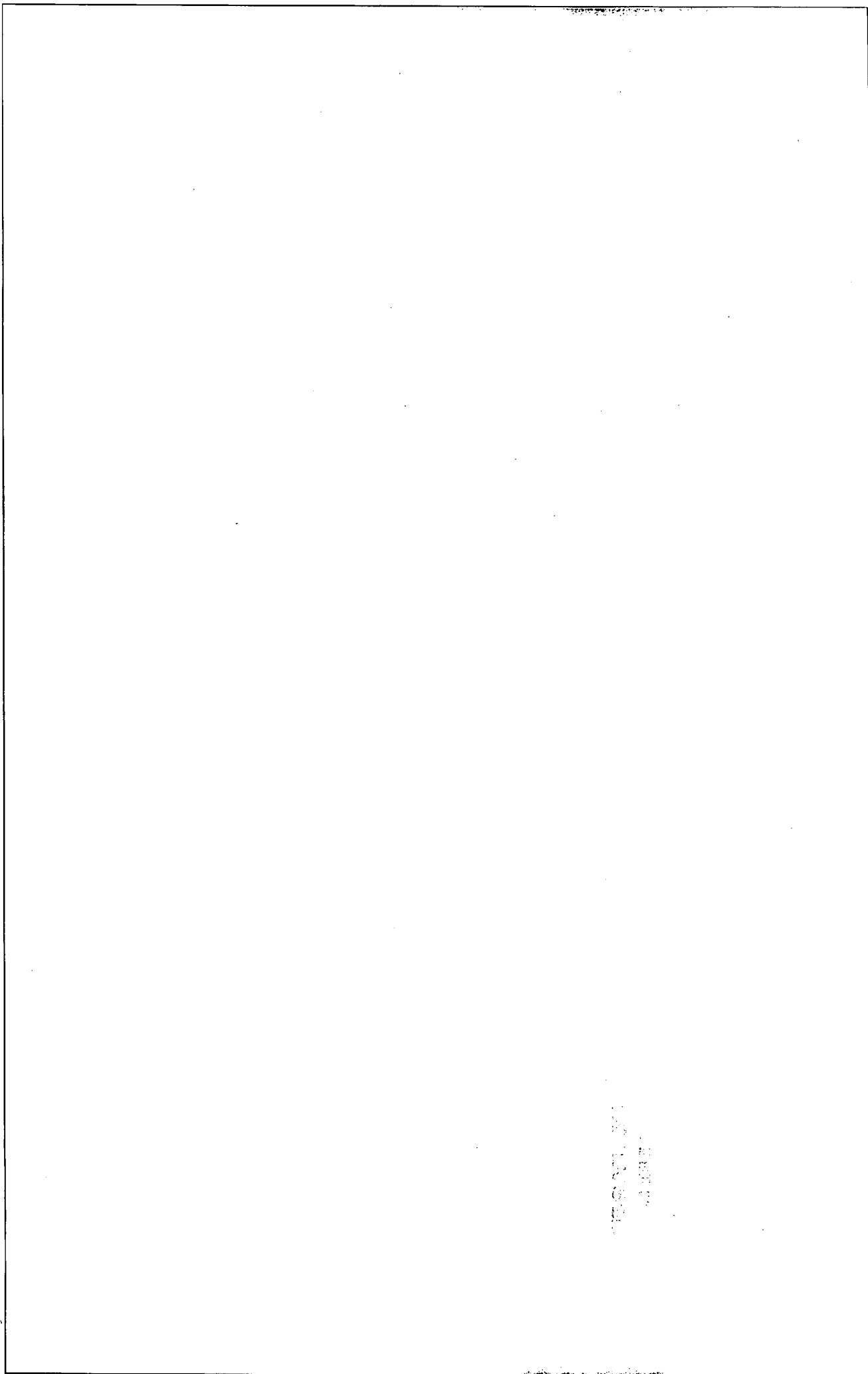
NOTES:

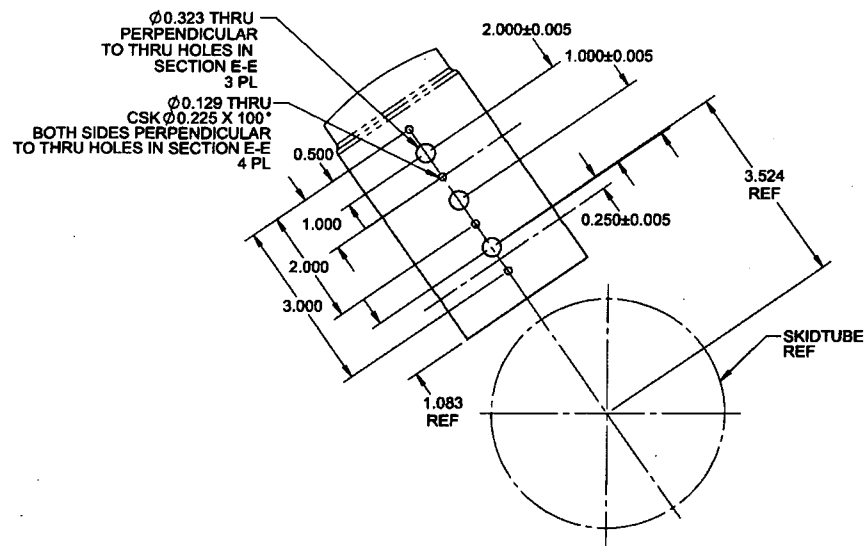
- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

RELEASED

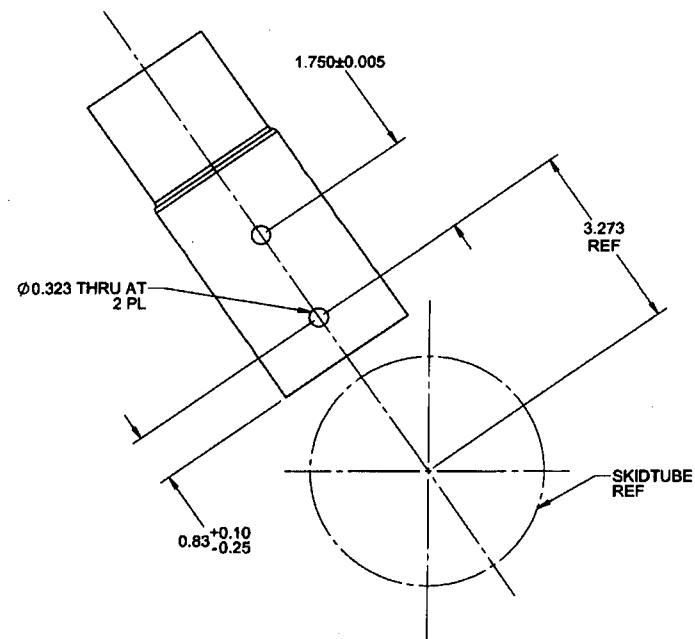
2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 3 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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DETAIL G (C2-3)
SCALE 4X

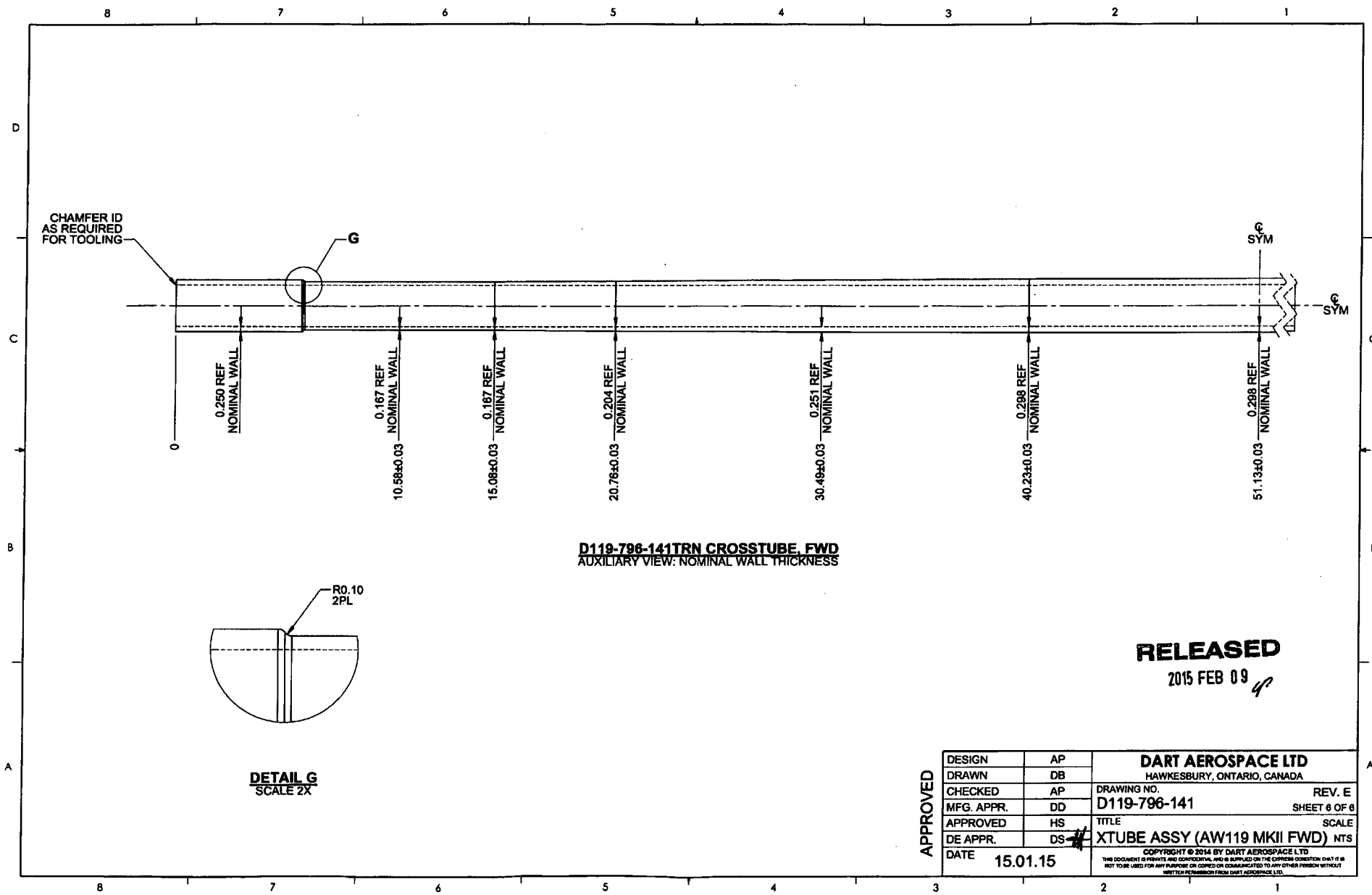


SECTION E-E (C2-3)
SCALE 2X

RELEASED

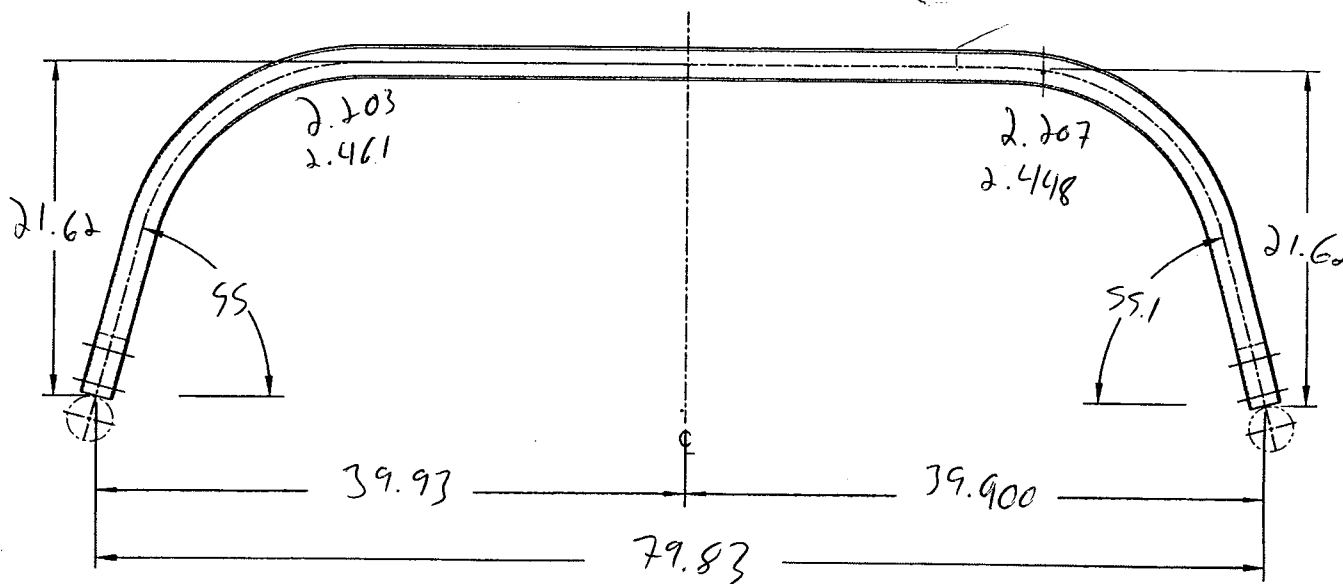
2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 4 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD) NTS	
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DART AEROSPACE LTD		Work Order:	129447
Description:		Part Number:	119-796-141
Inspection Dwg:	Rev:	Page 1 of 1	

Required Dimension	Min	Max
Height	21.49	21.75
1/2 Span	40.080	39.826
Angle	54°	57°
Total Span	80.15	79.77
Bending Passes	8	
Crushing		6.8%



	Side A	Side B
Bending Passes	6	5
Crushing	5.5%	5.2%
Comments		

QC15 Inspection
Date

DAS
03
9-89

15-2-12

esper PTO

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	
D	12.02.15	Added bending passes and crushing	KJ	
E	12.03.07	Revised comments table	KJ	

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Work Order Update ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data	15.02.12	130	1	PER D119-796-141 Rev. E, MINIMUM BENDING PASSES IS 8. ACTUAL BENDING PASSES WAS 5 & 6		ACCEPTABLE SR-D119-796-1 SHOWS THAT THIS PART HAS HIGH FATIGUE RESISTANCE.	15.02.12 	JW 15-02-12	 15-2-12 DAS 03 9-89		
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											

FAULT CATEGORY			
Landing Gear ☐ Bending ☐ Centre Not Concentric to O/S ☐ Cracks ☐ Crushed/Crimped ☐ Cuffs ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Ripples in Bend ☐ Torque Waves in Extrusion ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damaged ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drill Holes ☐ Drawing ☐ Finish ☐ Folio	☐ Grain ☐ Hardware ☐ Inspection Incomplete ☐ Instructions Incomplete/Unclear ☐ Maintenance ☐ Mislabeled ☐ Misread ☐ Offset ☐ Out of Calibration ☐ Out of Sequence ☐ Outside Dimensions	☐ Ovalized ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO27452

Purchase Order Date 2/17/2015

PO Print Date 2/17/2015

Page Number 2 of 3

Order From :

VC-SKY001

Ship To : DART AEROSPACE LTD

SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 905-678-5636

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

Ship To Contact

Ship To Phone

Ship Via: Delivered

Ship Acct:

Line Total: \$175.00

3 129447

D119-796-141
CROSSTUBE

2/17/2015

1.00

\$175.00

\$175.00

Yes

2/17/2015

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

SP15-0217

Line Total: \$175.00

4 129448

D119-796-241
CROSSTUBE

2/17/2015

1.00

\$175.00

\$175.00

Yes

2/17/2015

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Line Total: \$175.00

5 129312

D119-796-241
CROSSTUBE

2/17/2015

1.00

\$175.00

\$175.00

Yes

2/17/2015

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Note:

2/17/2015



skyservice
Air travel. Evolved.

NDT Work Order

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: YYZ 70313

Customer: DART RECURSAL Dept: NDT YYZ

Reference: 27452

Make:

Model:

Reg:

A/C S/N:

TSN:

CSN:

TSO:

Tail#:

Task: ☐ Scheduled ☐ Unscheduled ☐ A.O.G. ☒ P.T. ☐ M.T. ☐ E.T. ☐ U.T. ☐ R.T.

Work Required:

CARRY OUT NDT ON THE FOLLOWING CROSS TUBES:

- 1) ITEM ID = D119-796-141 FWD CROSS TUBE W.O.# 129447
- 2) ITEM ID = D119-796-141 FWD CROSS TUBE W.O.# 129310
- 3) ITEM ID = D119-796-241 AFT CROSS TUBE W.O.# 129312
- 4) ITEM ID = D119-796-241 AFT CROSS TUBE W.O.# 129448

Action Taken:

Date:

Initial/Stamp:

LIQUID PENETRANT INSPECTION

IAW ASTM E1417-M13 CARRIED

17 FEB 2015



OUT ON ITEMS LISTED ABOVE.

NO CRACKS FOUND

SP15-02-17

BLACK LIGHT = T-20990N

PENETRANT = ARDROX 970 P2SE

BATCH#

02312131

I certified that the maintenance described above has been performed with the applicable standard of airworthiness.

Signature:

Name:

GARY SMITH

ACA/SCA Stamp



Date:

17 FEB
2015

QA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause		Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design		15/2/18		1	Instruction for applying clear-coat window does not match actual process.	DAS 12 8-89 15/2/18	Acceptable to apply clear coat prior to white paint.	DAS 12 8-89 15/2/18		
Doc/Data										
Equip/Tooling										
Handling/Pre										
Material										
Operator										
Offset/Setup		15.03.03		1	ACCEPTABLE TO PACK D119-796-141 WHEN PROPOSED IS CURED . MINIMUM OF 60 HRS CHECK TORQUE	A.P. 15.03.03	NOT ACCEPTABLE			
Process										
Supplier										
Training										
Transport										
Unapproved										

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence
☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge		
☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other		